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Honors Theses at the University of Iowa

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Spring 2019

## Shape and Form

Xi Zhu

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SHAPE AND FORM

by

Xi Zhu

A thesis submitted in partial fulfillment of the requirements  
for graduation with Honors in the Art, Studio

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Monica Correia  
Thesis Mentor

Spring 2019

All requirements for graduation with Honors in the  
Art, Studio have been completed.

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SHAPE AND FORM  
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Spring2019  
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For my honors research I will be exploring the use of wood board to make a book holder that can change shape to cope with different situations. All the furniture I made before were fixed shapes, but I want to explore design and techniques for a structurally changeable book shelf.

First, I used a pocket cut technique, making grooves on the side walls of the book holder. These grooves could let the clapboards of the book holder move and sit in different positions. But in this plan, the book holder can't change its shape and size, making it unable to work well in a small space. Through the inspiration given by Chinese traditional katydids' cage, I got my second plan. I let two small book holder cross through each other. Next, I changed the spacing and size of the bookshelf by pushing and pulling the side walls. After I finish my drawing in Auto CAD, I used a 0.25 inches thickness MDF board laser cut a 5.5 inches wide, 6 inches height and 12 inches length book holder model for testing. Most books are between 4 inches and 13 inches wide. The model fit the books under 5.5 inches wide. But it was too short for books wider than 5.5 inches. Based on this test, I decided to expand my bookshelf 66% to accomodate books wider than 5.5 inches. In order to put the book more firmly in the book holder, I tilted the bottom and back of the book holder 15 degrees from the horizon. For the final material, I used birch plywood, for my book holder. I choose to use 0.75 inches thickness birch plywood first, but the wood strips on the bottom looked too thick. For these reasons, I choose using 0.5 inch birch plywood for my final work. Unfortunately, the 0.5 inch birch plywood board is too brittle. When I router cut the wood board, some of the surface was broken. I used wood chips and glue to fill the broken surface and smoothed it with sandpaper. Although the final results are good, if I do another book holder in the future, I will choose to use solid wood instead of plywood.

Through this project I had a better understanding of wood joints and structures. I learned how to make joints that allow furniture to change shape. Although not intended to be, I have a better understanding of the material differences between woods and how important the appropriate choice is to the success of the final project. However, I also learned how to repair damaged wood surfaces. I will be more cautious when choosing materials in the future.